



Corrosion Prevention and Control Program at Corpus Christi Army Depot

**Army Corrosion Summit
February 9, 2010**

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Outline



- **Background**
- **Concerns/Issues**
- **Significant Actions**
- **Future Plans**



Concerns/Issues



Background: Need to effectively process and store aerospace materials (some particularly susceptible to corrosion) in a marine environment conducive to aggressive atmospheric corrosion rates.

- **Main Issues**
 - Proper Practices
 - Aircraft Components
 - Facilities



Practices



- **Revision of D.05 Process Standard: In Process Preservation of Ferrous and Non-Ferrous Parts**
 - Guided by Cleaning and Corrosion Control TM (1-1500-344-23)
 - Selected preservative application based on parameters
 - Environment (indoors, indoors w/environmental controls, etc)
 - Duration of protection required (days, weeks, etc)



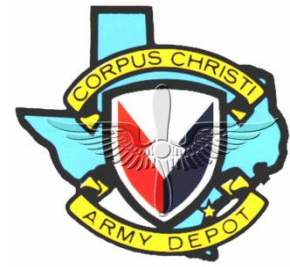
Practices (cont'd.)



- **Training of personnel—both initially planned and as issues arise. Examples include:**
 - Periodic STAR4D training to increase quality/efficiency of coatings (primers/paints)
 - AMCOM CPC personnel training of MFG/Process Production Div (preservative application)
 - MPED “informal” training of personnel (paint shop, QC inspectors)



Components—Issues

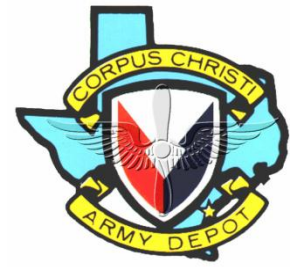


- Certain parts can never be unprotected
- Indoor temperature/RH fluctuations (10°F/30%)
- Upon induction, parts routed to multiple processing stations
- Idle time dictated by shop workload, “pull”





Components—Current Actions

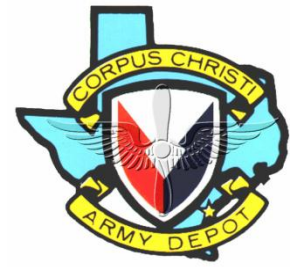


- **Ongoing investigation/trial of VpCI**
 - Bags
 - Films
 - Desiccants
- **Vapors form passivating layer of ions on metal surface**
- **Trial parts bagged after initial inspection, then processed, unwrapped/inspected at each stop**
 - Favorable initial results
 - Targets susceptible parts where preservative removal is not optimal
 - Long term: large-scale use as preservative supplement/replacement





Components—Current Actions



- **Protective covers for outdoor use**
 - Outdoor storage not ideal, sometimes unavoidable
 - Transport carts contain parts ranging in size, applied preservative
 - Cover system is multi-layer; includes waterproof, moisture wicking, CI layers
 - Still in initial phases; large scale incorporation upon successful trials

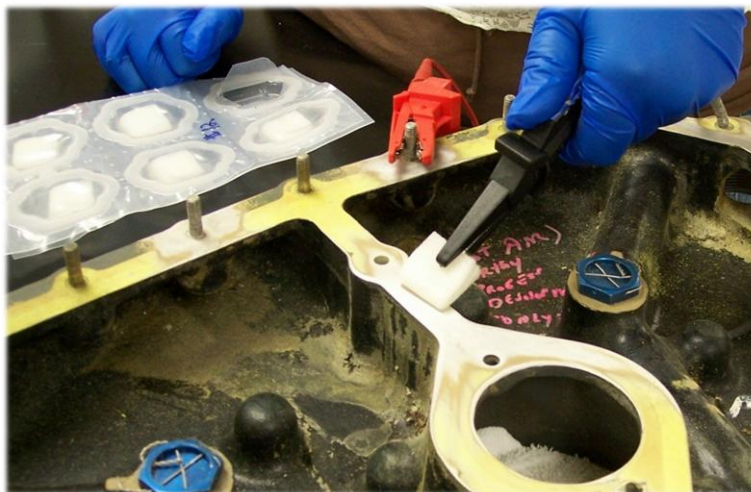




Future Plans—Components



- **Expansion of Tagnite coating application to more shop areas/potential replacement for Type VI chromic acid brush-on for magnesium**
- **Prototype Type VII PMB media for topcoat/primer removal from magnesium without touching Rockhard coating**
- **Initial testing of VpCI MIL-PRF-87937, Type IV Aircraft Cleaning Compound in Airframes Cleaning**





Facilities—Issues/Activities

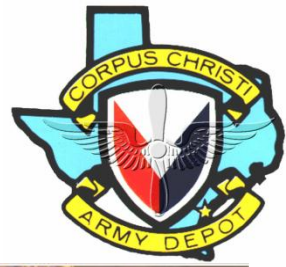


- 2 million ft², 50 year-old main production facility
- 10 year, 9 phase replacement plan
- As with processed components, environment significantly accelerates facility degradation
- Cooling tower/test cell circulation systems of particular concern
- Better communication with industrial engineering, incorporating materials selection into facility projects (heat exchangers)





Future Plans—Facilities



- Possible implementation of dehumidification technologies for storage/production areas presenting greatest corrosion issues
- Use of internal corrosion monitoring systems to optimize chemical treatment/life of cooling tower/engine test cell pipelines
- More widespread use of VpCl emitters for electrical/toolboxes





Conclusions



- **Local corrosion issues originate from combination of susceptible materials and detrimental environment**
- **Solutions often require action across several fields (material/regulatory/personnel)**
- **Future initiatives focus on process improvements, but proper training/adherence to new procedures essential for lasting effect**